

Wood stove pollution is a burning issue

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By Diane M. Marty, [E/The Environmental Magazine](#)

Before tossing those aromatic wood chips on the barbecue, using the fireplace to celebrate that first brisk fall day, or lighting a campfire in the great outdoors, you might want to consider this: Wood smoke can literally take your breath away.

"As many as 30,000 lives are lost every year because of wood smoke," said Mary Rozenberg, president of Burning Issues, a nonprofit organization focusing on wood smoke pollution.

The group points out that **low-energy materials like wood and charcoal actually release more pollution by volume than high-energy fuels like propane and natural gas.**

The sale of wood-burning appliances has increased 112 percent since 1992, according to the Hearth, Patio, and Barbecue Association (HPBA). "Wood stoves are a romantic and efficient way to heat your home," said Don Johnson, a HPBA spokesperson.

Rozenberg began investigating the possible links between wood smoke pollution and lung ailments after one particularly grueling winter. Her pulmonologist had prescribed her a variety of antibiotics over several months without any success. "On one visit, the nurse assured me that everybody gets off antibiotics after the heating season is over," said Rozenberg. When she arrived home, she counted an average of one out of six homes billowing smoke and soot from chimneys.

The information Rozenberg has gathered suggests a relationship between wood smoke pollution and a wide menu of diseases and health complaints.

"People think that because wood smoke is all natural, it can't be bad for them," said Philip M. Fine, a research associate in the Department of Civil and Environmental Engineering at the University of Southern California. "Tobacco is all natural too," he said. In fact, the Environmental Protection Agency (EPA) estimates the cancer risk from wood smoke to be 12 times greater than from an equal amount of tobacco smoke.

"Residential fireplaces and stoves, like fires, release wood smoke pollution," said Fine, who has been involved with several wood smoke emissions studies. "On the East Coast, wood smoke pollution is a regional concern. In the West, wood smoke becomes a local issue because the mountain topography and cold weather inversions inhibit its dispersal," he said.

"In some areas, **car and wood smoke pollution can be of the same order of magnitude,**" said Fine. "Everyone in Los Angeles focuses on vehicular emissions. But fireplace wood smoke is often a significant source of pollution there too."

SMOKE GOES EVERYWHERE

The byproducts of burned wood invade every corner of your space, even if you close all doors and windows and adopt a hermit's lifestyle. This invasion occurs because many of

the particles produced by incinerated lumber are smaller than 2.5 microns (one-fourth the diameter of a human hair). These tiny particulates seep through the smallest cracks and crevices, and once inhaled, can elude the body's natural purification mechanisms. Burning Issues warns that the particles may carry toxic gases, bacteria, and viruses deep into the lungs.

"Particulate pollution is the most important contaminant in our air," said Joel Schwartz, a Harvard School of Public Health research scientist. "We haven't done a lot of research regarding wood smoke specifically, but we know that when particle levels go up, people die. A number of studies show that there are changes in electrocardiogram patterns, which are risk factors for arrhythmia. There are also changes in inflammatory markers in the blood, which are risk factors for heart attack."

Health consequences people commonly experience after being exposed to wood smoke include eye, nose, mouth, and throat tenderness; coughing; trouble breathing; tightness of the chest; or symptoms related to pre-existing respiratory ailments like emphysema, according to Cindy Rosenberg, particulate matter program manager for the EPA's Region 8 Air and Radiation program.

"Besides particulates, wood smoke contains nitrogen dioxide, carbon monoxide, and many organic compounds such as aldehydes," said Rosenberg. Some of these substances are suspected carcinogens while others are known to cause cancer, irritate the nose and eyes, or damage lung tissue.

The EPA suggests that if you smell smoke or experience symptoms from wood smoke pollution, you should consider temporarily moving to another area, remaining indoors with windows closed, running your air conditioner or air-filtration units, and immediately reducing your physical activity level.

The American Academy of Allergy, Asthma, and Immunology also recommends especially avoiding poorly ventilated stoves and the burning of treated or uncured wood. Consumers can also install highly efficient stoves and fireplaces, such as the all-soapstone models made by Tulikivi (\$4,800 and up). These fireplaces burn wood more completely and release fewer pollutants.

Rozenberg eventually moved to the country to escape the choking urban air. But even on her remote 65-acre lot, she occasionally captures a whiff of smoke from a neighbor's chimney. "**Less than 15 percent of the population burns wood,**" said Rozenberg. She hopes it will eventually become as socially unacceptable as lighting a cigar in an elevator.

Diane M. Marty breathes freely in Littleton, Colo.

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